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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/339,616	ALLEN, MARK R.	
	Examiner	Art Unit	
	Tuyet Vo	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Applicant's arguments with respect to claims 1-9 and 11-28 have been considered but are moot in view of the new ground(s) of rejection.

CLAIM REJECTIONS

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3 9, 14-16 and 25 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yamuro (US Pat. 5,941,626).

Yamuro discloses in Fig. 1B an electronic circuit powering a predetermined number (6) of light emitting diodes (4) electrically coupled in series to form plurality of series blocks (4, 5) in parallel, wherein the first LED and the last LED in one series block directly coupled to an intermediate pair of wires via a resistor (8) which are electrically connected to an alternating current power supply (9) by connectors (2, 3), the LEDs in series blocks are connected in polarity thereby coupling of multiple light strings in an end-to-end straight arrangement relatively to a wire axis, whereas there are approximately 50 LEDs in series block are uniformly spaced apart (Fig. 1B) (col. 3, lines 10-45).

Even though this figure shows one end of the diode block being tied to the source via the resistor, by its natural layout, it fulfils applicant's definition of having this block directly ties to

the source. During operation, this resistor also serves the electrical conducting function which would allow the current to flow directly from one end to another without a detour passage.

Alternatively, the claimed invention has been viewed as an obvious variation in design choice over Yamuro in view of the fact that line 37, column 3, in this teaching clearly lays out a desire for doing away with the resistor connection if needed. Even though figure 1B shows the usage of a resistor to stabilize the operation of the system, it's teaching, however, specifically leaves the option of using this resistor to one of ordinary skill in the art. In the interest of making the design of this circuit feasible, one of ordinary skill in the art would have considered it a routine design choice to alleviate this resistor. Applying the design without the resistor as suggested in a massive production environment, this would mount up to a considerable saving in the production line.

Yamuro does not explicitly mention that each LED having an average alternating current drive voltage and being provided by an alternative current voltage. Nonetheless, the inclusion of these features is considered as an obvious variation in design choice, since power distribution to commercially available LEDs is subject to the make up of the LEDs. In another word, should one attempt to distribute different forms of power system than an average alternating current drive voltage to a conventional light system such as found in Yamuro, undesirable output would occur, which may result in shortening the life of the LEDs. In view of this reasoning, it is the examiner's position that operating LEDs with an average alternating current drive voltage is an unavoidable step which one must take into account in prolong the life of LEDs. As such, one of ordinary skill in the art would have considered it obvious to implement the source found in Yamuro with a conventional average alternating current drive voltage in the interest of maximizing the service of Yamuro's LEDs.

3. Claims 4, 6-8 and 21-24 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yamuro in view of Reymond (US Pat. 5,936,599).

Yamuro discloses substantially the claimed invention as noted above. However, Yamuro does not teach an electrical power supply provides alternating current having an alternating current voltage in the range of about 110V- 220V operated in at least 50 Hz.

Reymond discloses an electronic apparatus for AC powered light emitting diode comprising an AC power source of 120 V at 60 Hz supplied to the LEDs load.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the wide range power source taught by Reymond intoYamuro's lighting circuit for improving of adaptable capability with widespread standard power supplies.

Since human eyes perceive lighting as continuous for a light that emits at frequency above 4Hz, therefore, lighting emitted from LEDs which operate with a frequency about 60Hz definitely not being noticed by human eye as discontinuous lighting.

Even though, neither Yamuro nor Reymond discloses the number of LEDs in a series block is 100. The quantity of LEDs represented as a load are obvious a design choice to one having ordinary skill in the art, since they involved only routine skill in the art. In particular, an AC electric power source supplies 110V to operate 50 LEDs in series block, then it is obvious that 100 LEDs connected in a series block would be operated safely with an ac voltage supply source of 220 V for the same type of LEDs.

4. Claims 11, 12, 17 and 18 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yamuro.

Yamuro discloses substantially the claimed invention as noted above. However, Yamuro does not teach as following:

- LEDs in each series block are either of the same colors or of different colors in random or non random order,

-the length relative to the LEDs blocks are spaced either uniformly or not in either a periodic or pseudo-random arrangement,

Colorful LEDs coupling in the above manner for aesthetic purposes are an obvious matter of design choice to one having ordinary skill in the art, since the arrangement of LEDs having different colors in any pattern involves only routine skill in the art.

5. Claim 5 is rejected under 35 U.S.C. 103 (a) as being unpatentable Yamuro in view of Reymond.

Yamuro in view of Reymond discloses substantially the claimed invention as noted above except that each LED has a p-n defining a break down voltage above which voltage applied in reverse bias the p-n junction break down, and in which light string having the alternating current voltage is less than the break down voltage. Applying a reverse bias voltage across each LED into the p-n junction of a LED less than the break down voltage of LED is an obvious expedient of one having ordinary skill in the art, since it ensures a current through diodes in an operating region called a forward current which must have its peak voltage safely below breakdown voltage or manufacturer 's rating, otherwise, the significant reverse current entered from the cathode to the anode of the diode at the AC power supply above a break down voltage will destroy the diode device due to undesired heat generated from that unlimited current.

6. Claims 13 and 28 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yamuro in view of Frohardt et al. (US Pat. 3,758,771), hereinafter Frohardt.

Yamuro discloses substantially the claimed invention in claims 1 and 11 as noted above. However, Yamuro does not teach a lossy fiber optic rod having a diameter equal to a diameter of a corresponding LED lens within a fiber house for creating an optical icicle feature. Frohardt discloses Fig. 2 an illuminated wig using bundles of optical fibers (30) conduct illumination of a light emitting diode (16) within the house (32). Even though, Frohardt does not teach a lossy fiber optic rod having a diameter equal to a diameter of a corresponding LED lens, Frohardt's invention does not limit a length, size, shape, type or material in using optical fibers (col. 3, lines 1- 47), therefore it is an obvious design choice to one having ordinary skill in the art at the time the invention was made to facilitate Frohardt's teaching into Yamuro's apparatus by selecting the size, material of optical fibers such as a fiber optic rod type caused loss or diffusing the transmitting light or one large enough for transferring completely one LED light for particular application, such selection or making of use is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

7. Claims 19, 20, 26 and 27 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Yamuro in view of Chang et al. (US Pat. 5,887,967), hereinafter Chang.

As noted above, Yamuro teaches every feature of the claimed invention except for the particular mounting structure of which a keyed offset. Chang teaches a mounting structure with a keyed offset to ensure proper alignment between a bulb holder and the base of the bulb.

To prevent incorrect insertion of the bulbs, one of ordinary skill in the art would have considered it obvious to improve the mounting structure of Yamuro lighting bulbs with Chang's alignment system. In doing so, proper operation of the lighting system is a guarantee. Applicant's argument asserting the differences between the claimed invention and Reymond and Tong has been thoroughly considered but is now moot in light of the new ground of rejection. The argument asserting the differences between the claimed invention and Chang is disagreed. In particular, applicant alleges that the dint in Chang fails to assure a correct alignment in the same manner as claimed. In supporting this argument, the dint in Chang has been alluded as being formed for mere visual alignment without encountering the possibility of human error. This argument has not been found to persuasive in view of the following.

Much like the keyed offset as defined by the claimed invention, the dint (21, 31) and lead (41) in Chang do prevent incorrect insertion of the bulb into the base holder. Even though Chang does not specifically mention that such an alignment mechanism would ensure correct polarity, nonetheless it is implied that incorrect insertion of the light bulb into the holder would render the light system inoperative (col. 2, lines 1-14). Based upon the strict insertion requirement, matching polarity between the holder and the base upon insertion is an implicit feature found in Chang.

Remarks

Amendment filed February 28, 2001 has been entered.

CONCLUSION

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this Office Action from the examiner should be directed to Examiner Tuyet Vo whose telephone number is (703) 306-5497.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Papers related to Group Art Unit 2821 applications only may be submitted to Group Art Unit 2821 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT."

The Group 2810 Fax Center number is (703) 308-7722.

Tuyet Vo
June 19, 2001

Don Wong
Supervisory Patent Examiner
Technology Center 2800